REMARKS / ARGUMENTS

Claim 6 has been rejected under 35 USC 102(b) as being anticipated by Nichani et al. (5,673,334). To sustain a rejection under 35 USC 102(b), the Examiner must show that each element of the claim is taught by Nichani. To overcome such a rejection, Applicant must show that at least one element is NOT taught by Nichani.

First, note well that claim 6 as herein amended now includes the two aspects that the Examiner has admitted that Nichani is silent on, i.e., "Nichani does not recognize **diving the region of interest in its entirety** or **using a single search tree**", page 3, last two lines of paper number 15.

Consequently, the first and second elements of claim 6, as herein amended, are clearly **not** taught by Nichani. To make the difference even more clear, claim 6 has been further amended to explicitly state that the method includes: "running a coarse alignment tool to approximately locate the pattern **within a region of interest**", and then "using search tree information **of a single search tree** and an approximate location of a root sub-region, found by the coarse alignment tool, to locate, sequentially in an order according to the search tree information, a plurality of sub-regions **within the region of interest, the sub-regions covering the region of interest in its entirety,** each of the sub-regions being of a size small enough such that a conventional inspecting method can reliably inspect each of the sub-regions using respective models".

By contrast, Nichani, at col. 7, lines 36-46, wherein Nichani teaches that:

> A window 84 in which each of the patterns lies is stored along with the patterns 82 in the envelope data structure 80. The windows stored at train time provide respective **limited** areas of search for each of the coarse alignment patterns. The trained windows to be searched within the field of view, **limit the extent of area searched** and expedite the process of locating the coarse alignment patterns. These coarse alignment patterns areas of search should be **selected** to be **big enough** to accommodate the uncertain orientation of the package at run time. (emphasis added)

Thus, Nichani teaches a method of searching at run-time that does NOT cover the entire region of interest, because the windows do not cover the entire region of interest. By contrast, Applicant's windows are created in a way that ensures that the entire region of interest is covered and searched, because the entire region of interest is **totally** covered by sub-regions. (Eg. see Figs. 3 and 4) For further example, on page 6, lines 6-9, "if a sub-region cannot be located by the search tool due to, for example, spatial distortion, the sub-region can be further sub-divided into smaller sub-regions in an effort to find a sub-region size which could be located by the search tool". Thus, the windows of Nichani are NOT the same as the sub-regions of Applicants' invention. This distinguishes the second element from the teaching of Nichani.

Moreover, regarding the first element of claim 6, Nichani teaches training a **plurality** of models for coarse alignment at col. 7, lines 16-17. Also at col. 7, lines 38-40, Nichani states that "the windows stored at train time provide respective limited areas of search for each of the coarse alignment patterns." By contrast, amended claim 6 requires "running a coarse alignment tool to approximately locate the pattern within a region of interest" Consequently, the first element of Applicants' invention as set forth in claim 6 has been shown to be absent from the teaching of Nichani.

Further, Applicants' claim 6, second element, requires that each sub-region should be "**small** enough such a that a conventional inspecting method can reliably inspect each of the sub-regions". By contrast, Nichani teaches "These coarse alignment patterns areas of search should be selected to be **big enough** to accommodate the uncertain orientation of the package at run time." Thus, Nichani teaches away from **reducing** the size of sub-regions to enhance the likelihood that a search algorithm will work, instead teaching that a window must be **enlarged** until a search algorithm will work.

Thus, the nature and size of the sub-regions of Applicants' invention are different from the nature and size of the windows of Nichani. Consequently, the second element of Applicants' invention as set forth in claim 6 has been shown to be absent from the teaching of Nichani.

Also note that the second element of claim 6 has been amended to make it more clear that search tree information "of a **single** search tree" is used "for determining an order for inspecting each sub-region of the plurality of sub-

regions at run-time". By contrast, Nichani teaches a plurality of trees that is also referred to by Nichani as a "forest" of trees. More particularly, Nichani teaches a "minimum spanning forest" (MSF) of minimum spanning trees (MST). At col. 9, lines 23-27, it is stated that "each box that is associated with a local alignment point ... is a starting vertex or root for a MST in the MSF." Also, at col. 10, lines 15-17, "each local alignment point encountered is associated with a box that then becomes the root of a respective tree." By contrast, Applicants' invention employs a **single** tree for **all** of the sub-regions, **not** a plurality of trees, i.e., not a "forest" of trees.

Also, since the third element of claim 6 requires "sub-regions", and since Nichani is silent on sub-regions as taught by Applicants, then the third element of Applicant's invention as set forth in claim 6 has been shown to be absent from the teaching of Nichani.

Further, note that the third element of claim 6 now states that the method comprises "inspecting each of the sub-regions so as to produce a **difference image** for each of the sub-regions. This is to further distinguish claim 6 from the teaching of Nichani, who does **not** teach producing a difference image for inspection purposes. Referring to col. 13, lines 45-57, it's now clear that **Nichani instead teaches three parameters for inspection purposes: average grey level value, number of edges inside the box, and a shape score**. By contrast, Applicants teach at least producing a difference image for each of the sub-regions, as stated explicitly in claim 6.

Thus, since **all three** of the elements of Applicants' claim 6 are not taught by Nichani, as demonstrated above, the rejection of claim 6 under 35 USC 102(b) is deemed to be overcome.

Claims 1, 3, 4, 14, 21, 25, 27, and 28 have been rejected under 35 USC 103(a) as being unpatentable over Nichani et al. (5,673,334) in view of Rosser et al. (5,627,915).

Regarding herein amended claim 1, as stated above in detail, Nichani does not teach "sub-regions", required by at least three out of five elements of claim 1. Further, the windows of Nichani do not cover the region of interest in it's entirety, as required by at least two elements of claim 1, and explained in detail above.

Further, Applicants' claim 1, second element, requires that each sub-region should be "**small** enough such a that a conventional inspecting method can reliably inspect each of the sub-regions". By contrast, Nichani teaches "These coarse alignment patterns areas of search should be selected to be **big enough** to accommodate the uncertain orientation of the package at run time." Thus, Nichani <u>teaches away</u> from **reducing** the size of sub-regions to enhance the likelihood that a search algorithm will work, instead teaching that a window must be **enlarged** until a search algorithm will work.

Also note that the fourth element of claim 1 now requires that search tree information "of a **single** search tree" is used "for determining an order for inspecting <u>each sub-region of</u> the plurality of sub-regions at run-time". By

contrast, Nichani teaches a plurality of trees that is also referred to by Nichani as a "forest" of trees. More particularly, Nichani teaches a "minimum spanning forest" (MSF) of minimum spanning trees (MST). At col. 9, lines 23-27, it is stated that "each box that is associated with a local alignment point ... is a starting vertex or root for a MST in the MSF." Also, at col. 10, lines 15-17, "each local alignment point encountered is associated with a box that then becomes the root of a respective tree." By contrast, Applicants' invention employs a **single** tree for **all** of the sub-regions, **not** a plurality of trees, i.e., not a "forest" of trees.

The Examiner admits that "Nichani does not recognize dividing the region of interest in its entirety or using a single search tree, then citing Rosser et al. ("Rosser") to teach that it is known to divide the region of interest in its entirety into a plurality of sub-regions (Col. 5, lines 43-46) and use a single search tree for determining an order for inspecting each sub-region of the plurality of sub-regions at a run-time (Col. 5, lines 41-52).

However, Col. 5, lines 43-46 states "This comparison of incoming live image against the prestored reference image is done by a search comparator device 30 <u>using a search tree of **templates** 32 which comprises a sequence of small (typically 8 pixel by 8 pixel) sub-images (or templates) taken from the pyramid of the reference image 28. The search device 30 uses these **search templates** 32 in a **predetermined sequence** in order to rapidly ascertain if the sought after target appears in the current image of interest ...".</u> First note that in Applicants' invention, a search tool and an inspecting tool are **trained for a respective <u>single</u> model** for each of a plurality of sub-regions of a region of

interest. That means that each sub-region is searched by only one respective model. By contrast, a plurality of templates, called a "search tree of templates 32" in Rosser, are **all** used over the **entire** image to look for the "sought after target" within the current image of interest". (Col. 5, lines 41-49) Consequently, **each** portion of the current image of interest is searched by the **entire** search tree of templates 32. This is just brute-force exhaustive searching (e.g., col. 6, lines 64-66) without any optimization. This teaches away from Applicants' invention.

By contrast, Applicants' invention employs a "search tree" in a totally different sense, in that each sub-region is only searched by a respective template, and **in an order <u>determined by the search tree</u>**. This is NOT a **predetermined order**, but is a **different order** for each different spatially distorted pattern to be inspected. Thus, much computational overhead is eliminated in Applicants' invention by ensuring that each sub-region is searched by **only one** template, as required by the third element of claim 1, and claim 3, for example.

Further, in Applicants' invention, a single search tree is built so as to establish "an order so [as] to minimize a search range ...", as required by claim 3. By contrast, Rosser does **not** minimize a search range, instead searching the **entire** image with each template of the "search tree" of Rosser, and in a predetermined order that is NOT adaptive with respect to the image searched. Thus, Rosser **maximizes** the search range, using **all** possible templates. Again, Rosser is clearly teaching away from Applicants' invention.

Further, the "sub-regions" of Rosser are merely the uniform blocks of a raster scan over the entire image (e.g., 8x8 pixel sub-image, at col. 5, lines 58-60), the size depending on a pre-determined, non-adaptive pyramid of templates, as shown in Figs. 2A and 2C of Rosser, whereas the sub-regions of Applicants' invention vary in size in accordance with the particular image searched, such that each of the sub-regions is small enough such that each of the sub-regions is well approximated by an affine transformation, as required by claims 2, 10, 17, 24. Rosser is again teaching away from Applicants' invention. By contrast, Rosser is **silent** on any concern with sub-regions being small enough such that each of the sub-regions would be well approximated by an affine transformation.

Thus, combining Rosser with Nichani fails to remedy the deficiencies of Nichani, because the "search tree" of Rosser is merely a collection of search templates (col. 5, lines 43-46) that does not establish "an order so [as] to **minimize** a search range ...", as explicitly required by claim 3, and inherently required by claim 1. The search order of Rosser's search tree is an order in which each of the search templates in the tree is used to search each of the positions (e.g., col. 5, lines 46-48, and col. 5, lines 64-66) in a raster scan of the entire image to be searched. By contrast, the search order of Applicants' invention is an order in which the sub-regions of a region of interest are searched using a respective model so as to **minimize** a search range. Rosser is silent on minimizing a search range.

In fact, claim 1 requires that the method include "building a single search tree for determining an order for inspecting each sub-region of the plurality of

sub-regions at a run-time". First, those skilled in the art of industrial machine vision know that a sub-region must be **located** before it can be inspected, so claim 1 inherently requires what is explicitly required in claim 6, i.e., that search tree information is used to locate a plurality of sub-regions sequentially in an order according to the search tree information. In Rosser, by contrast, the sub-regions are searched in a raster pattern, using the "search tree" information to determine the order in which templates in the tree are used to search each sub-region. Yet, Applicants' invention as set forth in amended claim 1 uses only ONE single template per sub-region, so there is NO template order required.

Thus, using the search tree of Rosser instead of the multiple minimum spanning trees (minimum spanning forest) of Nichani would not result in Applicants' invention. The benefit of "to increase the speed of computation" is not likely, since Rosser uses an exhaustive search over the entire image, using every template in each search tree for multiple levels in the pyramid (e.g., see col. 8, lines 1-47).

Moreover, Rosser is searching an **entire** image on multiple levels in a pyramid, i.e., at **multiple** scales. By contrast, Applicant's sub-regions are at a **single** scale, and Applicants do not teach or claim sub-regions of the entire image at a plurality of scales. In a sense, Rosser is searching the entire image **multiple times** at different scales (e.g., see col. 8, lines 1-47), whereas Applicants search the entire image according to the search tree **only once**, and in a way that is optimized so as to minimize a search range by using the tree – an idea that is totally absent from Rosser or Nichani. For this reason, and all of

the reasons above, the rejection of claim 1 under 35 USC 103(a) is deemed to be overcome.

In analogy to claim 1, the rejection of claim 14 under 35 USC 103(a) is also deemed to be overcome.

Regarding claim 3, Rosser teaches away from "establishing the order so that transformation information for located ones of the sub-regions is used to minimize a search range for neighboring ones of the sub-regions", because Rosser consistently uses an approach which is exhaustive over all the templates and over multiple scales and over the entire image. By contrast, Applicant uses "minimize a search range" here, but also limits the templates to a single template, and a single scale for search over the sub-regions. So, there is no suggestion or motivation for Rosser to do anything like what's required by claim 3. Further, claim 3 depends from claim 1, which is deemed allowable. Accordingly, the rejection of claim 3 under 35 USC 103(a) is deemed to also be overcome.

Regarding claim 4, it depends from claim 1, deemed to be allowable, and so claim 4 is deemed to be allowable under 35 USC 103(a).

Claims 27 and 28 have been rejected under 35 USC 103(a) as being unpatentable over Nichani (5,673,334). Regarding claim 27, it has been amended in analogy to claim 1, and therefore the arguments that were presented to overcome the rejection of amended claim 1 apply here as well. In particular,

Nichani does not teach, suggest, or motivate "sub-regions" that cover an **entire** region of interest, as defined and claimed by Applicant, nor does Nichani teach, suggest, or motivate the use of a **single** tree. In fact, Nichani teaches away from "sub-regions" that cover an **entire** region of interest, and Nichani teaches away from the use of a **single** tree.

Regarding claim 28, since it is analogous to claim 3, the arguments in favor of claim 3 apply. Nichani teaches that "at every step when the tree is constructed, each box is attached to a box closest to it in order to **minimize the sum of the distances between the boxes**" (col. 10, lines 53-55). By contrast, Applicants' claim 28 requires that the building of the search tree "establish the order so that transformation information for located ones of the sub-regions is used **to minimize a search range** for neighboring ones of the sub-regions." Since it is possible to "minimize the sum of the distances between the boxes", and NOT minimize a search range, and vice-versa, these requirements are not equivalent.

In addition, claim 28 refers to sub-regions, which have been established to be absent from Nichani. In fact, Nichani teaches away from the "sub-regions" of Applicants. Further, claim 28 depends from a claim deemed to be allowable, and is therefore itself allowable as well. Accordingly, the rejection of claims 27 and 28 under 35 USC 103(a) as being unpatentable over Nichani (5,673,334) is deemed to be overcome.

Regarding claims 21 and 25, the arguments analogous to those presented for claim 1, 6, and 14 are applicable to claim 21, and the arguments analogous to claim 3 are applicable to claim 25. Accordingly, the rejections of claims 21 and 25 are deemed to be overcome.

Claim 2 has been rejected under 35 USC 103(a) as being unpatentable over Nichani in view of Rosser, as applied to claim 1, and further in view of Cipolla et al. (5,581,276). The Examiner admits that Nichani and Rosser both do not recognize the need for the size of the sub-regions to be small enough such that each of the sub-regions is well approximated by an affine transformation. Claim 2 requires that "the size of the sub-regions" be "small enough such that each of the sub-regions is well approximated by an affine transformation". Although Cipolla does mention an "affine transformation", **Cipolla actually teaches away** from combining affine transformation with Applicants' invention at col. 8, lines 12-20. Applicants' specification on page 2, lines 3-5, teaches that "a nonlinear spatially distorted image comprises a spatially mapped pattern that cannot be described as an affine transform of an undistorted representation of the same pattern." By contrast, Cipolla states at col. 8, lines 12-20 that "when ... the surface of the object imaged by the observer is also **sufficiently smooth**, the velocity field expressed by the above set of equations can be approximated by the linear equations within each small image region." By contrast, Applicants teach and claim that "the **size** of each of the sub-regions must be "small enough such that each of the sub-regions is well approximated by

an affine transformation". Note that the claim language is silent on any characterization of the surface.

Further, Cipolla does not remedy the deficiencies of Nichani and Rosser, so combining Cipolla with Nichani and Rosser would not result in Applicants' invention. For example, Cipolla does not teach "building a single search tree", and does not teach "dividing the region of interest in its entirety into a plurality of sub-regions", both being required by claim 1, from which claim 2 depends. Cipolla also does not diminish Rosser's deficiencies as explained above. Thus, combining Nichani, Rosser, and Cipolla would not result in Applicants' invention, even if it could be shown that there was any suggestion or motivation to combine all three of them. Accordingly, the rejection of claim 2 under 35 USC 103(a) is deemed to be overcome.

Moreover, since claims 10, 17, 24 depend from analogous independent claims, analogous arguments apply with reference to claims 6, 14, and 2, respectively, as stated by the Examiner, such that the rejections of claims 10, 17, 24 under 35 USC 103(a) are also deemed to be overcome for analogous reasons.

Claims 5, 13, and 20 were rejected under 35 USC 103(a) as being unpatentable over Nichani in view of Aiyer. Each of these claims calls for "using a golden template comparison method".

Aiyer does not remedy the deficiencies of Nichani combined with Rosser, so combining Aiyer with Nichani and Rosser would not result in Applicants' invention. For example, neither Nichani, Rosser, nor Aiyer teaches "building a single search tree for determining an order for inspecting the plurality of sub-regions at a run-time", and neither Nichani, Rosser, nor Aiyer teaches "dividing the region of interest in its entirety into a plurality of sub-regions", and then "training a search tool and an inspection tool for a **respective** single model for each of the plurality of sub-regions", both being required by amended claim 1, from which claim 5 depends. For example, Rosser does not train a **respective single** model for each of the plurality of sub-regions, instead using a **set** of templates for a each sub-region. Accordingly, the rejection of claim 5 under 35 USC 103(a) is deemed to be overcome.

Moreover, since claims 13 and 20 depend from analogous independent claims, analogous arguments apply, such that the rejections of claims 13 and 20 under 35 USC 103(a) are also deemed to be overcome for analogous reasons.

Claims 11, 18, 26, and 32 were rejected under 35 USC 103(a) as being unpatentable over Nichani as applied to claim 6, in view of Miyaki. Each of these claims calls for "using transformation information from located ones of the sub-regions to interpolate transformation information for a sub-region when the sub-region cannot be located". Here, note that "transformation information" refers to **location** information as represented by a "pose", or position

transformation, as is well-known in the art of machine vision. See specification, page 5, lines 7-9, for example.

By contrast, Miyaki teaches transformation of **pixel value** information. Fig. 6 of Miyaki shows how pixel information is transformed within a window, giving starting and transformed values in windows 601 and 602, respectively. Thus, Miyaki does not teach "transformation" as taught by Applicatants. Consequently, for this reason alone, combining Miyaki with Nichani would not result in Applicants' invention.

Further, Miyaki does not remedy the deficiencies of Nichani, so <u>combining Miyaki with Nichani could not possibly result in Applicants' invention</u>. For example, neither Nichani nor Miyaki teaches "building a single search tree", and neither Nichani nor Miyaki teaches "dividing the region of interest in its entirety into a plurality of sub-regions", both being required by claim 1, from which claim 11 depends. Accordingly, the rejection of claim 11 under 35 USC 103(a) is deemed to be overcome.

Claims 18, 26, and 32 have been rejected under 35 USC 103(a) over Nichani in view of Rosser as applied to claim 14, and further in view of Miyake (6,009,213). Rosser does not repair the deficiencies of Nichani, as explained above, nor does Miyake, as explained above. Moreover, since claims 18, 26, and 32 depend from analogous independent claims, analogous arguments apply, such that the rejections of claims 18, 26, and 32 USC 103(a) are also deemed to be overcome for analogous reasons.

Claim 33 was rejected under 35 USC 103(a) as being unpatentable over Nichani as applied to claim 6, and further in view of Clark (6,370,197). Clark does not teach what is claimed in previously presented claim 33. Clark teaches inspecting each block "to determine whether the data elements for that block may be **represented in a highly compact format**". (see Abstract, lines 3-5) By contrast, Applicants' previously presented claim 3 requires: "dividing one of the sub-regions into a plurality of smaller sub-regions when the one of the sub-regions cannot be **located <u>using a search tool</u>**." Thus, the methods and goals of Clark and Nichani are very different. In fact, there is nothing that teaches, suggests, or motivates combining Clark with Nichani. Further, even if one did combine these references, the result would not be Applicants invention as claimed in claim 33. Accordingly, the rejection of claim 33 under 35 USC 103(a) is deemed to be overcome.

Claims 12 and 19 were rejected under 35 USC 103(a) as being unpatentable over Nichani, as applied to claims 6 and 14, respectively, and further in view of Dance et al. (6,285,799). The Examiner asserts that Dance teaches predicting registration results. However, claim 12 requires "predicting registration results ... when training of the search tool ... was not successfully performed". Dance clearly does not teach the condition "when training of the search tool ... was not successfully performed". Dance does teach predicting registration results as part of a "coarse-to-fine" strategy for alignment, as stated

in col. 9, lines 65-67. Thus, Dance teaches away from predicting registration results "when training of the search tool ... was not successfully performed", as required by claim 12.

Further, since neither Dance nor Nichani teaches the condition "when training of the search tool ... was not successfully performed", combining these references would not result in Applicants' invention. Consequently, the rejection of claim 12 under 35 USC 103(a) is deemed to be overcome.

Regarding claim 19, analogous arguments are applicable. Consequently, the rejection of claim 9 under 35 USC 103(a) is deemed to be overcome.

Claim 29 has been rejected under 35 USC 103(a) as being unpatentable over Nichani in view of Rosser as applied to claim 27, and further in view of Barnard (5,604,819). Claim 29 depends from claim 27, which has been deemed patentable over Nichani and Rosser, as explained above. Barnard does not repair the deficiencies of Nichani and Rosser, so combining Barnard and Nichani with Rosser would not result in Applicants' invention as set forth in claim 27.

Moreover, Nichani teaches away from using a difference image and a match image, as required by claim 29. In the application discussed in Nichani, a check mark must be detected within boxes on a film package. It is the presence or absence of a check mark that must be detected (col. 13, lines 45-47). One of average skill in the art would immediately recognize that using a template matching approach to create a match image and a difference image would not be

practical, due to the wide variety of check marks that could be drawn by a human hand marking within a box. Thus, nothing in Nichani teaches, suggests, or motivates the creation of a difference image, or a match image, since template matching would not be used in Nichani. Rosser cannot repair the deficiencies of Nichani, as explained above. Consequently, the rejection of claim 29 under 35 USC 103(a) is deemed to be overcome.

Claims 8, 16, 23, and 30 have been rejected under 35 USC 103(a) as being unpatentable over Nichani as applied to claim 6, and over Nichani in view of Rosser as applied to claims 14, 21, and 29, respectively, and further in view of Companion, and in view of Barnard. Claim 8 depends from claim 6, which has been deemed patentable over Nichani, as explained above. Companion and Barnard taken together do not repair the deficiencies of Nichani and/or Rosser, so combining Companion, Barnard and Nichani would not result in Applicants' invention as set forth in claim 8.

Moreover, Nichani teaches away from using a difference image and a match image, as required by claim 8. In the application discussed in Nichani, a check mark must be detected within boxes on a film package. It is the presence or absence of a check mark that must be detected (col. 13, lines 45-47). One of average skill in the art would immediately recognize that using a template matching approach to create a match image and a difference image would not be practical, due to the wide variety of check marks that could be drawn by a human hand marking within a box. Thus, nothing in Nichani teaches, suggests, or

motivates the creation of a difference image, or a match image, since template matching would not be used in Nichani.

Given that Nichani does not teach, suggest, or motivate the creation of a difference image for sub-regions, there is even less teaching, suggestion, or motivation to **combine** difference images of sub-regions. Consequently, the rejection of claim 8 under 35 USC 103(a) is deemed to be overcome.

Regarding the rejection of claims 16, 23, and 30, analogous arguments are applicable, and Rosser does not repair the deficiencies of the applied references Companion, and Barnard . Consequently, the rejection of claims 16, 23, and 30 under 35 USC 103(a) is deemed to be overcome.

Claims 7 has been rejected under 35 USC 103(a) as being unpatentable over Nichani as applied to claim 6, and further in view of Michael (5,825,483). Regarding claim 7, there is no teaching, suggestion, or motivation to combine these references, and one of average skill in the art of machine vision would be taught away from combining them. That's because Michael teaches an article of manufacture for removing distortion prior to location of features on a semiconductor wafer (Abstract, lines 1-5). The distortion itself is not used for inspection purposes … in Michael, distortion must be **removed** prior to inspection. Motion or movement is never discussed in Michael or Nichani.

Further, in Michael, distortion is due to optical effects, not features of the object under inspection or measurement. For example, Michael discusses

distortion due to lens irregularities, tilt of the lens, and tilt of the camera. Col. 7, lines 30-37. Michael also mentions perspective distortion, scale factors, and chromatic distortion. Col. 7, lines 37-45. By contrast, Applicants' are silent on optical distortion, instead using "distortions" of a pattern as compared with a model pattern (see specification, page 5, lines 17-18). Such distortions are wells-suited for inspection purposes, since the distortions are due to the object under inspection. Distortions in Michael are not useful for inspection purposes, because they are due to the optical system used to view and inspect the object, and consequently, are not indicative of the object itself.

Further, even if one were to combine these references, the result would not be Applicants' invention, because Michael does not repair the deficiencies of Nichani. For example, claim 7 requires that "the distortion vector fields are used to make a pass/fail decision based on user-specified tolerances. The "scoring function" in Nichani in Col. 13, lines 53-56, as cited by the Examiner, is an entirely different metric than the distortion vector field, which is an ensemble of vectors distributed over space, whereas the score of Nichani consists of an eclectic variety of measurements (col. 13-14).

Consequently, the rejection of claim 7 under 35 USC 103(a) is deemed to be overcome.

Regarding the rejection of claims 15, 22, 34, 35, and 36, analogous arguments are applicable based on arguments presented for claims 7, 7, 6 & 7,

14 & 7, 6 &7, respectively. Consequently, the rejections of claims 15, 22, 34, 35, and 36 under 35 USC 103(a) are deemed to be overcome.

Claim 31 has been rejected under 35 USC 103(a) as being unpatentable over Nichani in view of Rosser, in further view of Barnard (5,604,819) as applied to claim 29, and further in view of Michael. As explained in the traverse of the rejection of claim 7, there is no teaching, suggestion, or motivation to combine these references, including Barnard. Moreover, these references teach away from such a combination. Even if one were to combine them, the result would not be Applicants' invention. Further, it's not clear that such a combination would be functional. Consequently, the rejection of claim 31 under 35 USC 103(a) is deemed to be overcome.

Claim 9 has been rejected under 35 USC 103(a) as being unpatentable over Nichani in view of Michael as applied to claim 7, and further in view of Companion, and Barnard. As explained in the traverse of the rejection of claims 7 and 8, there is no teaching, suggestion, or motivation to combine these references, including Companion and Barnard. Moreover, these references teach away from such a combination. Even if one were to combine them, the result would not be Applicants' invention. Further, it's not clear that such a combination would be functional. Also, Michael, Companion, and Barnard fail to remedy the deficiencies of Nichani. Consequently, the rejection of claim 9 under 35 USC 103(a) is deemed to be overcome.

Accordingly, Applicants assert that the present application is in condition for allowance, and such action is respectfully requested. The Examiner is invited to phone the undersigned attorney to further the prosecution of the present application.

Respectfully Submitted,

Dated: 9/3/03

Russ Weinzimmer
Registration No. 36,717
Attorney for Applicants
P.O. Box 862
Wilton, NH 03086
Phone: 603-654-3524
Fax: 603-654-3556